the ordinary type of pseudo-sanitation contained in current literature for the housewife, to find that Dean Talbot in her first chapter quotes as a text Dr. H. W. Hill's statement that "The old sanitation was concerned with the environment, the new is concerned with the individual, and finds the sources of infectious disease in man himself rather than in his surroundings." The following principles of "the new sanitation" immediately follow as illustrations which "show changes in sanitary theory which have been abundantly and conclusively proved."

"Night air is purer than day air, and should be admitted freely to the house.

"Gases from marshes do not cause malaria.

"The quality of the air in the breathing zone is more important than the general air of the room.

"The quantity of carbon dioxide or 'carbonic acid' is not a measure of the unhealthfulness of air.

"Ordinary variations in the normal gaseous constituents of air produce no apparent effects.

"High humidity, combined with high temperature, produces the discomfort ordinarily attributed to 'bad air,' and is unhealthful.

"Ordinary buildings and rooms ventilate themselves to a considerable extent. A small house needs comparatively less provision for change of air than a large building.

"Air from properly constructed sewers is not harmful.

"Sunlight can not be depended on for disinfection or as a substitute for cleanliness. Its value is physiological, psychical, and chiefly moral.

"Actual light rather than window area should be the measure of the efficiency of room-lighting.

"Odors are not harmful physically, but when unpleasant should be eliminated by cleansing methods rather than by ventilation.

"Disinfection as ordinarily practised, especially by amateurs, is practically valueless."

These brief statements, which so well present some of the chief conclusions of recent public health science, almost constitute a syllabus of the book. They are elaborated in eight chapters, dealing with the situation of the House and Care of the Cellar, Plumbing, Air and Ventilation, Heating, Lighting and Light, Furnishing, The Country House and Household Control of Infection, and each chapter is followed by some twenty direct practical questions intended to focus the attention of the housewife on the immediate problems of her own dwelling which fall under the general subject discussed. The viewpoint is throughout thoroughly sound and up-to-date and this little book of 116 pages ought to do notable service in the cause of public health education.

C.-E. A. Winslow

COOPERATIVE INVESTIGATION OF THE MISSISSIPPIAN FORMATIONS

The Mississippian formations of the Mississippi valley states will be studied in cooperation as a result of an important field conference held during October in Missouri. The following states were represented:

Arkansas	Purdue.
Illinois	DeWolf.
Indiana	Barrett, Beede.
Iowa	Kay.
Missouri	Buehler, Hughes.
Ohio	Prosser.
Oklahoma	Ohern, Snider.
Tennessee	Purdue.
U. S. Geological Survey	W. H. Herron.

These formations measure approximately 2,000 feet, and they have been described at various times in the past without much regard for previous usage of stratigraphic units or names. Thus in a single state the same rocks are represented under three distinct names, even in comparatively recent literature.

Since considerable work on the Mississippian formations is now being done, it is important that cooperation be established between the several states concerned, and the U. S. Geological Survey. A permanent committee in charge of this matter on behalf of the states includes H. A. Buehler, of Missouri, G. F. Kay, of Iowa, and A. H. Purdue, of Tennessee. The chief geologist of the U. S. Geological Survey will cooperate with this committee in order to give future work suitable oversight, and in order to prevent friction.

The significance of this cooperative move-

ment will be apparent to all geologists and mining engineers, and it is to be hoped that similar cooperation on work relating to other state problems will be effective in the near future.

F. W. DEWOLF,
Secretary

SPECIAL ARTICLES

ON THE ACOUSTIC EFFICIENCY OF A SOUNDING BOARD

THE experiments described below appeared to yield such a variety of information, of so definite a character, that it seemed worth while to record them, in spite of their simplicity.

The chapel of Adelbert College, built in 1910, had proved unsatisfactory in its acoustic properties. The architect prescribed a sounding board, as likely to remedy the defect, and sent a sketch embodying his suggestion. It was thought worth while to make a preliminary test before erecting a permanent sounding board, and the writer was asked to take charge of the matter.

The chapel is a building of late English Gothic type. The nave is 104 feet long, with narrow and low side aisles, barely 6 feet wide, including the massive piers. The width of the nave, not including the aisles, is 30 feet. The chancel is 34 feet long and 30 feet wide, without aisles. The chancel floor is raised about 16 inches above that of the nave. Thus the general shape of the building is a long and narrow rectangle, 140 feet by 30, with no important recesses or irregularities. The ceiling is arched, about 48 feet high to the top of the arch. Its curvature is such that any focal line which might be formed by reflection would be not near the floor, but high up in the auditorium.

Experiments gave little evidence of local echo or interference. The acoustic difficulties arise chiefly from general reverberation. The problem was then to determine by direct comparison the value of a sounding board as a corrective of general reverberation.

It is evident that the experiments must be of such a kind as would appeal not merely to a physicist, but to any intelligent person. This means that they must be comparable with the ordinary use of the chapel, and must involve the hearing of ordinary speech. Yet it was of course desirable that they should have some quantitative character, and that the individual and personal characteristics of the hearers should be so far as possible eliminated or averaged.

Several members of the college faculty and two or three advanced students gave their cordial assistance. To their patience and carefulness is due whatever of value these experiments may have.

Three speakers took part, differing greatly in characteristics and in quality of voice, but all accustomed to public speaking.

It is a commonplace that ordinary speech is understood largely by context and association throughout a whole sentence rather than by actual hearing of the individual words. To eliminate this factor, lists of unconnected words were read from a spelling book, at a rate and with intonation similar to that used in a connected passage. One who has not tried this can hardly realize how much we rely on association in listening to an address. In order that this association-factor might not be left entirely out of account, a passage from some oration (always the same oration in any one set of experiments) was read in addition to the spelling-book list.

Three rows of seats on the floor, and the front row of the gallery at the back of the house, were selected as representative of the whole auditorium. The seats on the floor were the seventh, fourteenth and twenty-first from the front, and were called in the tests *G*, *N* and *U*, respectively. The position of the listener in any one row of seats, whether in the middle or on either side of the chapel made no apparent difference in the ease of hearing. The speaker was equally well heard from any part of the row, whether he stood in the pulpit, or in the middle of the front edge of the chancel floor. These facts were established by experiment before the sounding board was put in place.

The sounding board, made after the design of the architect, was of the horizontal type